REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 9-12, 15 and 16 are pending of which all but claim 15 are directed to elected subject matter. Counsel notes the examiner has acknowledged the request to rejoin claim 15 once the product claims are in condition for allowance. Claim 15 depends from independent product claim 9.

Claims 1-8, 13 and 14 are canceled as directed to non-elected subject matter, this action taken without prejudice to a divisional application directed to this subject matter.

The sole issue raised in the outstanding Official Action is the patentability of claims 9-12 and 16 over published European application EP-A-0440369 to Kenji Okinaka, cited as prior art as of its publication date of September 8, 1999.

Applicants' claims are directed to spindle-shaped magnetic metal particles containing iron as a main component having the following properties:

(1) an average major axial diameter of 0.05 to 0.15 μm

(2) an aspect ratio of from 5:1 to 9:1

(3) a size distribution (standard deviation/average major axial diameter) of not more than 0.30

(4) a crystallite size D_{110} of 130 to 160 Å

(5) A Co content of from 0.5 to less than 6 atm% based on whole Fe

(6) an Al content of from more than 10 to less than 20 atm% based on whole Fe

(7) a rare earth element content of from 1.5 to 5 atm% based on whole Fe

(8) an atomic ratio of Al to Co of from more than 2 to 4

(9) a coercive force of 111.4 to 143.2 kA/m

(10) an oxidation stability of saturation magnetization ($\Delta\sigma s$) of not more than 10%, and

(11) an ignition temperature of not less than 130°C.

An object of the present invention is to provide fine spindle-shaped magnetic metal particles containing iron as a main component, which can exhibit not only adequate

coercive force, for example, 111.4 to 143.2 kA/m, good dispersibility and good oxidation stability, but also excellent coercive force distribution in spite of the average major axial diameter thereof of as small as 0.05 to 0.15 μm.

In the spindle-shaped magnetic metal particles containing iron as a main component of the present invention, when the atomic ratio of Al to Co of the spindle-shaped magnetic metal particles containing iron as a main component is not more than 2:1, it is difficult to control the coercive force to within the desired range of 111.4 to 143.2 kA/m (1,400 to 1,800 Oe). Also, when the atomic ratio of Al to Co is more than 4, the saturation magnetization and oxidation stability of the obtained magnetic metal particles containing iron as a main component tend to be deteriorated. See the discussion of these characteristics in the specification at page 19, last paragraph and page 20.

European Patent 0940369 (Okinaka) assigned to the owners of the subject application, the sole listed applicant being the senior inventor herein discloses spindle-shaped magnetic iron-based alloy particles having the following properties:

(1) an average major axial diameter of 0.05 to 0.18 μm

(2) an aspect ratio of from 4:1 to 9:1

(3) a size distribution (standard deviation/average major axial diameter) of not more than 0.20

(4) a crystallite size D_{110} of 120 to 180 Å

(5) a Co content of 1 to 20 atm% based on whole Fe

(6) an Al content of 1 to 15 atm% based on whole Fe

(7) a rare earth element content of from 1 to 15 atm% based on whole Fe

(8) a coercive force of 1,800 to 2,500 Oe, and

(9) an oxidation stability of saturation magnetization ($\Delta\sigma s$) of not more than 10%.

As the examiner correctly points out (page 3, last 3 lines), in Okinaka, there is no description nor suggestion of an atomic ratio of Al to Co of from more than 2 to 4 as required by applicants' claims. This is a key aspect of the present invention, as explained above. Further, in Okinaka, there is no description nor suggestion of controlling the

coercive force to be within a range of 111.4 to 143.2 kA/m (1,400 to 1,800 Oe) and attaining the desired good oxidation stability, in spite of an average major axial diameter of the particles as small as 0.05 to 0.15 μm.

To illustrate this point, in Reference Examples 1 to 6, the relationship between atomic ratio of Al to Co and coercive force, aspect ratio and oxidation stability of saturation magnetization are set forth below based upon information included in EP '369.

	Atomic ratio of Al to Co (-)	Coercive force (Oe)	Aspect ratio (-)	Oxidation stability (Δσs)
Reference Example 1	10/25=0.4	2274	8.0:1	3.2
Reference Example 2	5/20=0.25	2180	7.9:1	4.5
Reference Example 3	10/10=1.0	1921	7.8:1	4.6
Reference Example 4	10/25=0.4	1527	4.0:1	12.6
Reference Example 5	10/25=0.4	1621	4.4:1	16.3
Reference Example 6	10/25=0.4	1426	4.0:1	13.8

Data for Reference Example 1 is given at lines 1-10 on page 12. Data for the remaining Reference Examples 2-6 including the atomic ratio of Al to Co is reported in EP '369 at page 26, coercive force at page 27, aspect ratio at page 25 and oxidation stability at page 27.

As seen from the above, spindle-shaped magnetic metal particles containing iron as a main component of the Reference Examples 1 to 6 have an atomic ratio of Al to Co of 0.4 to 1.0, which is out of the range of applicants' claims. Further, the coercive force of these spindle-shaped magnetic metal particles containing iron as a main component of the Reference Examples 1 to 3 is 1921 to 2274 Oe, which is out of the range of applicants' claims. Alternatively, the spindle-shaped magnetic metal particles containing

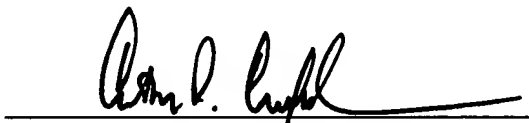
iron as a main component of the Reference Examples 4 to 6 have an aspect ratio of 4.0:1 to 4.4:1, an oxidation stability of saturation magnetization ($\Delta\sigma s$) of 12.6 to 16.3, and a rare earth element content of 8 atm%, which are all out of the range of the present invention.

Therefore, in Okinaka, there is no motivation to control the coercive force to 111.4 to 143.2 kA/m (1,400 to 1,800 Oe) while at the same time attaining good oxidation stability by controlling the atomic ratio of Al to Co to from more than 2 to 4. Accordingly, one of ordinary skill in the art would not foresee the spindle-shaped magnetic metal particles containing iron as a main component as defined in applicants' claims from the description of Okinaka.

For the above reasons it is respectfully submitted that the claims of this application define inventive subject matter. Reconsideration and allowance are solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 

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